

ENVIRONMENTAL ASSESSMENT NO. OR090-00-003
Cottage Grove Lake/Big River Restoration Plan

Prepared by
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United States
Department of the Interior
Bureau of Land Management
Eugene District
South Valley Resource Area

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
EUGENE DISTRICT OFFICE

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I. INTRODUCTION

A. BACKGROUND

In 1996, as part of implementation of the Northwest Forest Plan, a watershed analysis was prepared for the Cottage Grove Lake/Big River Watershed (CGL/BR). One of the recommendations stemming from that effort was that an integrated resource “activity plan” be developed for this watershed. This required that the landscape as a whole be examined and a management scheme for BLM-managed land be designed that best fit this particular watershed. As a result, the Cottage Grove Lake/Big River Restoration Plan was developed.

B. PURPOSE OF AND NEED FOR THE ACTION

The purpose of Proposed Action is to manage the CGL/BR watershed on a landscape level that would accomplish the goals outlined in the Eugene District’s Resource Management Plan (RMP). The RMP establishes land use allocations and broad resource management goals. It does not in all cases provide for sufficient detail to apply ecosystem management to on-the-ground site-specific situations. Thus, the need for the Proposed Action stems from the need to identify more specific detail in the management of public lands in this watershed in order to accomplish ecosystem management on a watershed scale.

C. CONFORMANCE WITH LAND USE PLAN

The Proposed Action and alternatives are in conformance with the Eugene District Record of Decision and Resource Management Plan, June 1995 (RMP). The RMP makes land use allocations and sets general goals for managing public lands within the Eugene District. The Proposed Action builds upon those goals to identify more specific actions needed to fully accomplish those goals.

II. PROPOSED ACTION AND ALTERNATIVES

A. PROPOSED ACTION

The Proposed Action is to implement the management program as shown in the attached “Draft Cottage Grove Lake/Big River Restoration Plan.” The draft plan would include transportation management objectives for the CGL/BR watershed and a habitat restoration program (see draft plan, pages 7-11 and Appendix A).

To meet transportation management objectives, selected roads would be (1) blocked or gated; or (2) “decommissioned.” Each of these is described below.

1. Blocking/gating would consist of installing a lockable gate or other barrier to close the road to vehicles. Blocking/gating would occur on 34 roads, which would close approximately 11 miles of road.
2. Decommissioning would consist of blocking/gating, removing culverts, establishing cross drains and removing fills from stream channels and potentially unstable fill areas, leaving the road in an “erosion resistant” condition. In some cases, roadways would be subsoiled and seeded/planted to reestablish vegetation. Decommissioning would occur on 27 roads (approximately 13 miles).

Other road repair actions would occur in order to reduce the risk to aquatic and terrestrial ecosystems attributable to the road network. These activities are shown in the draft plan, Appendix A. In all cases, including road closures described above, work would generally be limited to within the existing road prism.

Habitat restoration activities would include the following:

- (1) Removal of human-caused barriers to aquatic species migration—this would include replacement of existing culverts, reconstruction of existing sites, or installation of downstream structures to raise water levels within the culverts. This could occur at 23 road crossings.
- (2) Placement of large wood and other in-stream structures into selected streams. In-stream structures could include boulders, weirs, or large logs. Thirteen stream reaches have been identified that could receive this type of treatment.
- (3) Thinning or hardwood conversion in selected riparian areas. Work could include commercial density management, “cut and leave”, or hardwood conversion to reestablish conifers. Six stream reaches have been identified that would receive thinning or hardwood conversion.
- (4) Individual tree release. Under this action, trees surrounding individual dominant trees could be cut and left in place. Approximately 500 acres of 25-35 year old stands in the Late-Successional Reserve could be treated with individual tree release.
- (5) Young stand thinning. Approximately 1,000 acres of 15-25 year-old stands within the LSR could be thinned to a wide spacing.
- (6) Snag creation. Up to 10 snags per acre on approximately 500 acres of 60-70 year old stands in the LSR could be created. This could be done by girdling, inoculation or cutting/notching tops from live trees.

Individual project surveys (such as cultural resource surveys, threatened or endangered species surveys, and Survey and Manage or Protection Buffer species surveys) would be completed prior to project implementation. Individual projects would be modified, relocated or dropped entirely if necessary to comply with standards and guidelines for the protection of located species.

For any in-stream work or culvert replacements, the following procedures would be followed:

- (1) All work would be scheduled during the dry season of the year and in accordance with guidelines issued by the Oregon Department of Fish and Wildlife (ODFW).
- (2) When working next to or within the stream channel, spill prevention kits would be utilized.
- (3) Where depth or channel conditions warrant, a by-pass would be used to intercept stream flow and route the water around the work area to reduce the potential for siltation or introduction of petroleum products into the water.
- (4) All heavy equipment would be cleaned prior to contract work to slow the spread of noxious weeds. Staging areas would be located in areas free of noxious weeds.
- (5) Prior to the initiation of project work, notification would be given of potential road delays or closures. Appropriate safety procedures would be used to control traffic in project areas involving roadways used by the public.

For any proposed project sites within a quarter mile of suitable spotted owl habitat, no operations would occur until after the critical nesting season (ending July 1), or until the end of the nesting season (September 30), depending on site specific conditions.

B. ALTERNATIVE A--ADDITIONAL ROAD CLOSURES

Alternative A would be the same as the Proposed Action, except three additional roads could be gated to further reduce vehicular access within the Elk Emphasis Area. These roads include the following:

- Road No. 23-3-12 (Fawn Peak)
- Road No. 23-3-18 (Boulder Creek, both ends)
- Road No. 23-2-7.1 (Edwards Creek).

Gates would remain closed for all but administrative uses, including those of private timber companies. However, they would be open for general vehicle access during big game hunting seasons, generally from early October through November.

C. NO ACTION ALTERNATIVE

Under the No Action Alternative, the draft plan would not be adopted. The projects described in the draft plan may be considered at a later date, on a project-by-project basis. Existing road maintenance levels would be the *de facto* transportation management objectives; no road closures would occur except for those necessary to implement existing Maintenance Level 1 roads.

D. ALTERNATIVES CONSIDERED BUT NOT ANALYZED

Alternatives to specific features of the Proposed Action were considered but not analyzed as the interdisciplinary team developed the draft plan. Alternatives that simply varied design features of specific actions would not result in measurable differences in impacts, either direct and indirect or cumulatively.

III. ISSUES

A. ISSUES SELECTED FOR ANALYSIS

1. How will the attainment of Aquatic Conservation Strategy objectives at the watershed scale be affected?

One of the major components of the Northwest Forest Plan is the Aquatic Conservation Strategy. Any action taken on BLM managed land must either be neutral to or contribute to the attainment of Aquatic Conservation Strategy objectives. Many of the actions proposed in the Draft Landscape Plan could affect the agency's ability to attain the Aquatic Conservation Strategy objectives. Thus, this is an issue to be analyzed in this EA.

2. What are the impacts to special status species and special interest species from road closures/decommissioning and habitat restoration activities?

Special Status Species include those listed as threatened or endangered under the Endangered Species Act, Bureau sensitive species identified in the Eugene District Resource Management Plan, and special interest species (such as elk) that inhabit this watershed. Habitat for many of these species occurs within this watershed and could be affected by actions proposed in the draft plan.

3. What are the impacts to public access from road closures and decommissioning?

Transportation management actions proposed in the draft plan could affect access to public land within the watershed. Impacts from these actions on public access have been selected

for analysis.

IV. AFFECTED ENVIRONMENT

The Cottage Grove/Big River Watershed is a fifth field watershed within the Willamette River Basin and the Willamette River physiographic province. The watershed includes the headwaters of the Big River and Little River drainages which flow together to form the Coast Fork of the Willamette River. Detailed information describing the watershed is available in the Cottage Grove Lake/Big River Watershed Analysis (USDI 1997).

V. ENVIRONMENTAL CONSEQUENCES

The Proposed Action and alternatives would have environmental effects. However, none of the alternatives would have effects beyond those described in the RMP EIS and the NSO FSEIS. Impacts based upon analysis of the alternatives are described below.

A. UNAFFECTED RESOURCES

The following resources are either not present or would not be affected by any of the alternatives: Areas of Critical Environmental Concern, prime or unique farm lands, Native American religious concerns, solid or hazardous wastes, Wild and Scenic Rivers, Wilderness, minority populations, and low income populations.

B. DIRECT AND INDIRECT EFFECTS OF THE PROPOSED ACTION

- 1. Impacts to Attainment of Aquatic Conservation Strategy Objectives.** The Proposed Action includes activities within Riparian Reserves that are needed to attain Aquatic Conservation Strategy (ACS) objectives. The following is a site-specific analysis of the effect of the Proposed Action on attainment of the ACS objectives:

ACS Objective 1: Road decommissioning (Actions 1-1.1 and 1-1.2 as shown in the Draft Plan), in-stream structure enhancement (Draft Plan Action 3-2.1), and hardwood-to-conifer conversion in Riparian Reserves (Draft Plan Action 3-3.1) would contribute to the restoration of the distribution and complexity of watershed and landscape-scale features needed to ensure protection of the watershed's aquatic systems. Under the Proposed Action, approximately 12 miles of roads would receive decommissioning. These actions would involve removal of fill in stream channels and in potentially unstable fill areas in order to restore natural hydrologic flow. In-stream structure enhancement would occur on approximately 7.5 miles of stream channel; this action would restore specific habitat characteristics identified as currently lacking within the selected stream reaches for local and migrating biota. Hardwood conversion would improve selected stands' ability to produce large woody debris to the stream channel in the future.

ACS Objective 2: Elimination of barriers to aquatic species migration (Draft Plan Action 3-1.1) would contribute to the restoration of the spatial connectivity of the aquatic ecosystem within the watershed. Under the Proposed Action, 12 high priority barriers and 11 moderate priority barriers would be removed over a ten year period. Removal of barriers would increase the available habitat for aquatic species.

ACS Objective 3: The Proposed Action would contribute to the restoration of the physical integrity of the aquatic system by placement of in-stream structures in selected stream channels (Action 3-2.1). Selected stream channels have been identified as lacking habitat complexity for the various life history stages of salmonids. Providing a future supply of woody debris to the streams (Action 3-3.1) would also help restore the physical integrity of the aquatic system over the long term.

ACS Objective 4: Over the long term, the Proposed Action would maintain the water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Short term and localized increases in turbidity would occur as in-stream projects are implemented. During road decommissioning activities, a minor amount of sediment could be produced, which would have negligible effects on the aquatic ecosystem.

ACS Objective 5: The Proposed Action would help restore the sediment regime, the flow regime, and the gravel deposition regime. Action 3-2.1 (in-stream structures) would create areas where sediment and gravels would be deposited. Actions 1-1.1 and 1-1.2 (road decommissioning) would restore the natural routing of water and decrease the amount of runoff entering directly into streams from road drainage.

ACS Objective 6: Implementation of the Proposed Action would not prevent or retard maintenance of in-stream flows. None of the actions outlined under the Proposed Action is expected to affect peak, high, or low flows.

ACS Objective 7: The Proposed Action would contribute to the restoration of natural timing, variability, and duration of floodplain inundation. Under Action 3-2.1, placement of in-stream structures would result in the formation of deep pools, back-water and off-channel aquatic habitat. Such structures would reduce local gradient and velocity in the channel, thus providing a diversity of microhabitats necessary for the life history stages of fish.

ACS Objective 8: The Proposed Action would contribute to the restoration of the species composition and structural diversity of plant communities, and habitat to support well-distributed populations of some riparian-dependent species. Through density management thinnings and hardwood-to-conifer conversions (Action 3-3.1), retained conifers would grow larger faster than if left untreated, and as a result would be able to provide large down wood sooner. The Proposed Action would cause a reduction in canopy closure for several decades in the thinned areas, which could result in some micro-climatic alteration or other adverse effects for species that prefer complete canopy closure or that do not tolerate disturbance. Any such effect would be minor because of retention of residual trees, the extensive untreated reserve areas, and the current poor habitat condition of the stands for most species associated with late-successional forests.

ACS Objective 9: The Proposed Action would maintain habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species. The Proposed Action would assist in the distribution of vertebrate and invertebrate species by removing barriers and improving riparian habitat.

- 2. Impacts to Special Status Species and Special Interest Species.** In general, implementation of the Proposed Action would result in improvement of habitat for a variety of special status and special interest wildlife species, but would focus on northern spotted owls, bald eagles and elk.

Northern Spotted Owls. Decommissioning 5 miles of road within the LSR would reduce disturbance to northern spotted owls from vehicle traffic and maintenance activities, especially during nesting season. Decommissioning roads allows vegetation to reclaim road-beds, and would also lead to eventual increase in canopy cover and the restoration of microclimatic conditions. Habitat for rodents and other small animals comprising owl prey base would increase. Gating and blocking roads rather than decommissioning them would also reduce disturbance, but would not increase canopy cover or restore microclimatic conditions. Gating/blocking would close approximately 8 miles of road within the LSR.

Restoration activities in LSRs (proposed management actions 4-1.1, -1.2, and -1.3) could include individual tree release, young stand thinning, and snag creation. Individual tree release would promote diameter growth and fuller crowns with large branches, conditions that are desirable to late-successional associated species. These openings and selected trees

would be expected to develop some of the diversity needed to restore late-successional function over time. Young stand thinning would be similar to precommercial thinning except the spacing would be wider with the expected result being increased diameter growth.

Snag habitat is generally limited in this watershed. Under the Proposed Action, approximately 10 snags per acre on 500 acres could be created. Snags would be created by girdling, blasting tops, and fungal inoculation. There would be no direct adverse impacts from girdling or fungal inoculation, other than to the subject tree. Impacts from blasting tops of trees to create snags would be localized and minor; all such activities would occur outside of the nesting season (March 1 through September 30), so no impact is anticipated to nesting raptors or owls. Snag creation would increase habitat for a number of species, including prey species for northern spotted owls.

Bald Eagles. Under the Proposed Action, approximately 1.5 miles of road would be decommissioned or gated either within or in close proximity to Bald Eagle Habitat Areas (BEHA). Impacts would be similar to those described for northern spotted owls, but eagle habitat is much more limited in this watershed. In addition, bald eagles in this watershed are associated with the reservoir which provides them with fish, their primary food source. The primary benefit of closing roads near or within the BEHAs would be to reduce human-related disturbance.

Elk. Under the Proposed Action, approximately 15.6 miles of road within the Elk Emphasis Area would be closed or decommissioned. This would reduce overall road density on BLM-managed lands from 4.9 miles of road per square mile of public land to 4.1 miles of road per square mile, still substantially over the RMP target of 1.5 miles of open road per square mile of public land. However, further opportunities are constrained by the land ownership pattern and existing road use agreements.

3. **Impacts to Public Access.** Under the Proposed Action, approximately 23 miles of road would be closed by gating/blocking or decommissioning, thus reducing the amount of road physically accessible to vehicles. Impacts would occur in two forms: first, roadsphysically accessible to vehicles may be closed; and second, roadslegally accessible to the public may be closed.

Regarding physical access, most private timberland in the watershed is controlled by the Weyerhaeuser Company. The company generally opens its lands to big game hunting in the fall, although there is no legal and perpetual right of public access across their lands. Consequently, some hunters may cross through Weyerhaeuser land only to find that a particular road on public land has been closed or decommissioned. Hunters would still be able to walk along closed or decommissioned roads, but vehicle access would be eliminated. Other hunters who choose to not walk or cannot walk distances because of physical limitations may be displaced to other areas. The actual number of hunters that would be adversely affected is unknown, but assumed to be low, because only a small percentage of existing roads would be closed or decommissioned.

Regarding legal public access, two general conditions must be met for a BLM road to provide legal public access. First, the road must begin from a county road, state highway or federal highway, and its beginning must be on public land. These three types of roads all provide legal public access, and any BLM road stemming from them would provide legal public access onto adjacent public land. Second, if the BLM road crosses private land, BLM must have an easement from the private landowner granting the public the right to use the road.

Under the Proposed Action, only 1.8 miles of roads identified for closure or decommissioning provide legal public access. These roads are all dead-end spurs that provide no through access. Other roads that would be closed or decommissioned under the Proposed Action are located such that access to them is limited by private lands with no right of legal access

granted to the public. Thus, the impact of eliminating 1.8 miles of legal access within this watershed would be negligible.

C. DIRECT AND INDIRECT EFFECTS OF ALTERNATIVE A

- 1. Impacts to Attainment of Aquatic Conservation Strategy Objectives.** Alternative A includes the same actions as described under the Proposed Action, and would result in similar impacts to attainment of ACS objectives. Under this alternative, three additional gates would be installed on main roads within the watershed, which would result in less traffic on the roads behind the gates. This action would not prevent or retard attainment of any of the ACS objectives at the watershed scale.
- 2. Impacts to Special Status Species and Special Interest Species.** Under Alternative A, the additional road closures would have the potential to reduce disturbance to a wide variety of wildlife species, including elk and northern spotted owls. However, because these are “shared use” roads, the private timberland owner would be allowed access, and gates would not always be closed. Additionally, the gates would likely be open during fall hunting seasons. As a result, the potential beneficial effect of these additional road closures would be less than if the roads were permanently closed.
- 3. Impacts to Public Access.** Gates installed on the three additional roads would be closed for most of the year, but would be open during hunting season in the fall. Private landowners with holdings behind the gates would have keys to the gates and would have unlimited access. Gates could be left open at times to expedite management activities, such as during an active timber harvest.

Assuming, however, that the gates would be locked most of the year, physical access would be restricted on an additional 86 miles of road. These three roads are major collectors in the watershed, and many minor roads emanate from them. Closing the three main roads would eliminate nearly all vehicle access on the north side of the Big River Road within the Elk Emphasis Area and LSR, and would eliminate approximately one-fourth of the vehicle access on the south side of the Big River Road.

Not all of the roads accessible from these three main roads provide legal public access. Restricting access on the three main roads would restrict legal access on approximately 5 miles of road within the Elk Emphasis Area and LSR.

D. DIRECT AND INDIRECT EFFECTS OF ALTERNATIVE B (NO ACTION)

- 1. Impacts to Attainment of Aquatic Conservation Strategy Objectives.** The No Action Alternative would maintain current conditions of the Riparian Reserves. Road decommissioning, instream structures, and hardwood conversion projects would not occur. In some of these locations, conditions of the Riparian Reserves would continue to deteriorate. In the short term, the No Action Alternative would not contribute to the restoration of Riparian Reserves within the Big River Watershed. In the long term (many decades), conditions in Riparian Reserves would improve, but such improvement would be at a slower rate than under either the Proposed Action or Alternative B.
- 2. Impacts to Special Status Species and Special Interest Species.** Under the No Action Alternative, none of the restoration activities described in the Proposed Action would occur. In the short term, the watershed would continue to be deficit in many important habitat features, such as snags and down wood. Elk and other wildlife species would continue to be subject to disturbance from vehicle traffic on roads that would otherwise be closed and/or decommissioned under the other alternatives. In the long term, habitat conditions would improve as forested stands in LSR and Riparian Reserves mature.
- 3. Impacts to Public Access.** Public access would not be affected by the No Action

alternative. Roads on federal land would remain open except in emergency situations. Access on private land roads would continue to be subject to the decisions of the private landowners.

E. CUMULATIVE EFFECTS

This analysis incorporates the analysis of cumulative effects in the USDA Forest Service and USDI Bureau of Land Management Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl, February 1994, (Chapter 3 &4) and in the Eugene District Proposed RMP/EIS November, 1994 (Chapter 4). These documents analyze most cumulative effects of road decommissioning, habitat restoration, and other related management activities. None of the alternatives in this Proposed Action would have cumulative effects on resources beyond those effects analyzed in the above documents. The following section supplements those analyzes, providing site specific information and analysis particular to the alternatives considered here.

Most of the Upper Coast Fork Willamette Watershed is in forest industry ownership, with an equal amount being BLM administered land and other private holdings. Land use in the watershed is primarily forest management in the higher elevations, rural residential and agriculture along the Interstate 5 corridor and along the Coast Fork, and urban use concentrated in and around Cottage Grove.

It is likely that forested stands on BLM-managed lands outside of the LSR would be subject to regeneration or thinning harvests. The actual rate of harvest for this watershed is not specified in the Eugene District RMP; however, up to 1,300 acres would be analyzed for timber harvest over the next 5 years. Roads could be constructed for timber harvest, but most would be natural surface and temporary, with obliteration following harvest activities.

Private forest lands within the watershed would most likely continue to be subject to intensive forest management, including clear cutting and burning. Also, some forest stands on private land could be converted to nonforest uses. Roads constructed to facilitate timber harvests on private lands would likely be permanent, rocky roads.

Private timber companies would probably continue with their present policies regarding public access across their lands, including allowing public use during hunting seasons.

1. Proposed Action

Long-term effects are expected to improve wildlife habitat overall. Snag densities and down, coarse woody debris (CWD) would increase initially, which would benefit snag-dependent wildlife species. The long term cumulative effects of both upland and Riparian Reserve treatments on Riparian Reserves would be positive. Road decommissioning and other restoration activities in Riparian Reserves would hasten restoration of the overall health of Riparian Reserves on federal land throughout the watershed.

Cumulative effects on public access would be negligible. Given the amount of road physically accessible to the public, the incremental decrease in the amount of road available for the public would be negligible.

2. Alternative A

Cumulative effects on wildlife and riparian resources would be similar to those described under the Proposed Action. Additional benefit would be realized from the additional road closures described under this alternative, because the roads would be closed during nesting and calving seasons. The beneficial impact would be tempered because it is likely that the roads would be open during hunting seasons and active timber harvests. The additional roads subject to closure under Alternative A would remain as roadways, and no long term restoration

of roadbeds would be realized.

3. Alternative B (No Action)

Under the No Action Alternative, conditions in Riparian Reserves would improve over time, but at a much slower rate than under either Alternative A or the Proposed Action. There would likely be a short term downward trend in Riparian Reserve and aquatic habitat conditions because known problems would remain unchanged. There would be no cumulative effects to public access under this alternative.

VI. CONSULTATION AND COORDINATION

A. LIST OF PREPARERS

The Proposed Action and alternatives were developed and analyzed by the following interdisciplinary team of BLM specialists:

Don Meckley	Engineering
Carole Jorgensen	Wildlife and Threatened and Endangered species
Rick Colvin	Landscape Planner
Al Corbin	Timber Management
Richard Hardt	Ecology
Pete O'Toole	Silviculture
Mike Southard	Cultural Resources
Steve Steiner	Hydrology
Chuck Vostal	Fisheries
Molly Widmer	Botany
Barry Williams	Soils

B. CONSULTATION

Projects that may affect threatened or endangered species would undergo consultation with the U. S. Fish and Wildlife Service on an annual basis. Projects planned for a certain year would be addressed in that fiscal year's programmatic biological assessments and reviewed by the US Fish and Wildlife Service. Any mandatory Terms and Conditions that are received in the biological opinion would be incorporated into the project design.

C. PUBLIC PARTICIPATION

This environmental assessment will be sent to the following list of groups, agencies and individuals:

Ann Mathews, Eugene, OR
Carol Logan, Kalapooya Sacred Circle Alliance, Springfield, OR
Charles and Reida Kimmel, Eugene, OR
Confederated Tribes of the Siletz, Siletz, OR
Confederated Tribes of the Grand Ronde, Grand Ronde, OR
Craig Tupper, Eugene, OR
David Simone, Eugene, OR
George Sexton, American Lands Alliance, Eugene, OR
Governor's Forest Planning Team, Salem, OR
Harold Schroeder, Eugene, OR
Jan Wroncy, Eugene, OR
John Bianco, Creswell, OR
John Poynter, Lorane, OR
Kris and John Ward, Eugene, OR
Lane County Land Management, Eugene, OR
Neal Miller, Eugene, OR
Oregon Dept. of Forestry, Springfield, OR

Oregon Dept. of Fish and Wildlife, Springfield, OR
Oregon Dept. of Environmental Quality, Portland, OR
Oregon Natural Resources Council, Eugene, OR
Pacific Rivers Council, Eugene, OR
Pam Hewitt, Marcola, OR
Peter Saraceno, Eugene, OR
Roseburg Forest Products, Roseburg, OR
Sierra Club - Many Rivers Group, Eugene, OR
Sondra Zemansky, Junction City, OR
Swanson-Superior Forest Products, Inc., Noti, OR
Western Environmental Law Center, Eugene, OR

VII. REFERENCES

USDA Forest Service and USDI Bureau of Land Management. February 1994. Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl. Portland, Oregon.

USDA Forest Service and USDI Bureau of Land Management. April 1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl.

USDI Bureau of Land Management. November 1994. Eugene District Resource Management Plan/Environmental Impact Statement. Eugene, Oregon: Eugene District Office.

USDI Bureau of Land Management. June 1995. Eugene District Record of Decision and Resource Management Plan. Eugene, Oregon: Eugene District Office.

USDI Bureau of Land Management. May 1997. Cottage Grove Lake/Big River Watershed Analysis. Eugene, Oregon: Eugene District Office.



Bureau of Land Management
Eugene District
South Valley Resource Area



COTTAGE GROVE LAKE- BIG RIVER

WATERSHED RESTORATION PLAN

DRAFT
January 2000

1.0 INTRODUCTION

1.1 PURPOSE OF THIS PLAN

As the Eugene District of the Bureau of Land Management moves from the initial stages of implementing the Northwest Forest Plan and the Resource Management Plan, applying the principles of ecosystem management to on-the-ground management becomes increasingly important. Through the watershed analysis process, we learn about the natural processes occurring within a watershed, and the important relationships that are needed to maintain the health of the land. Watershed analysis was intended to provide information to be used in subsequent project planning.

The purpose of this plan is to facilitate multiple use management within the Cottage Grove Lake/Big River Watershed, while ensuring the sustained health of the land. This plan incorporates a broad range of management actions to be implemented over the next several years.

1.2 CONFORMANCE WITH LAND USE PLANS

This plan is in conformance with the Record of Decision for Amendments to the Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (April 1994, also known as the "Northwest Forest Plan"), and with the Eugene District Record of Decision and Resource Management Plan (June 1995). These two plans establish land use allocations and management objectives for the allocations that have guided the development of the actions contained within this document.

1.3 RELATIONSHIP WITH OTHER PLANS, STATUTES, AND REGULATIONS

This plan provides management direction for restoration and transportation management activities on the public lands within the Cottage Grove Lake/Big River Watershed, and as such precludes the need to develop additional activity or project plans on those subjects.

The Northwest Forest Plan and the RMP both provide general guidance on the management of public lands as it relates to land use allocations (LUA), the Aquatic Conservation Strategy (ACS), Survey and Manage species (S&M), and so forth. The RMP also provides direction that is specific for public lands within the Cottage Grove Lake/Big River Watershed that will be implemented as part of this plan but that requires no further environmental analysis.

2.0 ISSUES

Issues were identified through the watershed analysis and by examining the Eugene District Resource Management Plan. The BLM landscape planning team compiled the final list of issues.

2.1 Issue 1--Transportation Planning and Road Decommissioning

The RMP directs that a transportation management plan be developed that meets Aquatic Conservation Strategy objectives. Culvert replacement and road decommissioning are important parts of overall transportation management objectives for the watershed. Issues which need to be addressed include the following:

- ! What roads can be decommissioned, given existing right-of-way agreements?
- ! What roads should be decommissioned, and what are the expected benefits?
- ! What roads should be left open, and for what reason?
- ! Where and when should culverts be replaced? What are priorities for culvert replacement?

2.2 Issue 2--Management of Relic Forest Islands ACEC

The Eugene RMP designated two stands of mature/old growth forest as Relic Forest Islands ACECs. The RMP also provided a certain amount of management direction for these. Issues that need to be resolved include:

- ! Of the actions specified in the RMP, what is needed to fully implement them?
- ! What further actions are necessary to fully accomplish the goals of the ACEC?

2.3 Issue 3--Habitat Restoration

Restoring terrestrial and aquatic habitat is an important element in the RMP and the Northwest Forest Plan. According to the watershed analysis, the watershed is deficient in down wood and snags, and structure is lacking in many streams. Questions to be answered include:

- ! What are the desired future conditions for this watershed?
- ! What natural conditions should be replicated through restoration?
- ! Where are the high priority areas for restoration located?

- ! What restoration actions are appropriate for this watershed given its current condition?
- ! Should restoration occur in non-fish bearing streams, and if so, where?

3.0 OBJECTIVES

Objectives are statements of what is to be accomplished that are specific, measurable, attainable, realistic, and can be completed within a specified timeframe. They are developed to help achieve the goals identified in the larger land use plans and to resolve local geographical resource problems or use conflicts (issues). This section outlines the objectives for the Cottage Grove Lake/Big River Watershed, specific management actions needed to accomplish the objective, and a rationale as to how the actions will help resolve one or more of the identified issues.

3.1 ISSUE 1 OBJECTIVES

3.1.1 Objective 1-1

Reduce the risk to aquatic and terrestrial ecosystems attributable to the road network in the watershed within 5 years by managing roads according to the road objectives shown in Appendix A.

Rationale: The road network in this watershed is relatively stable and not the source of major problems of sedimentation. However, roads do present some risk of impact to aquatic resources, and do contribute to wildlife disturbance. Culverts associated with roads can be barriers to fish and other aquatic life. Culverts that restrict the natural stream channel can cause hydrologic instability and habitat loss. Closing or decommissioning specific roads can minimize potential impacts to aquatic and terrestrial resources.

Management Action 1-1.1:

Manage roads in this watershed according to TMOs shown in Appendix A. First priority will be to close roads in core habitat areas for northern spotted owls, bald eagle habitat areas (BEHAs), and ACECs. Second priority will be to close roads that are currently maintenance level 1 roads with a low management need. Third priority will be to repair/replace culverts to allow passage of aquatic organisms. Last priority will be to close other roads identified for closure.

Rationale: Owl core areas, BEHAs, and ACEC lands contain some of the most sensitive resources in this watershed. Closing roads in these areas first would help ensure the long-term protection of these resources. Closing roads not needed for management purposes would help reduce the overall road density in the watershed. Replacing culverts would help achieve Aquatic Conservation Strategy Objectives.

3.1.2 Objective 1-2

Reduce road-related impacts to elk in the Elk Emphasis Area by reducing “open” road density to 1.5 miles of road per square mile of public land within 10 years by various combinations of closure and decommissioning.

Rationale: The CGL/BR Elk Emphasis Area was designated as the highest priority elk habitat on BLM lands within the watershed. Closing roads in the EEA would reduce human-caused disturbance to elk. Road restoration (reclamation) would restore habitat lost to the original road construction, restore thermal and hiding cover over time if planted to trees, or improve forage habitat in selected areas if planted to grasses and forbs. The RMP states that a general target for roads open to motorized use in EEAs is 1.5 miles (or less) of road per square mile, and current road density in CGL/BR is about 4.9 miles/sq. mi. The CGL/BR Watershed Analysis also recommends a road density of 1.5 miles/sq. mi.

Management Action 1-2.1

In addition to actions identified under Objective 1-1, work with road use permittees to identify other roads within the Elk Emphasis Area that could be closed to vehicle traffic through temporary or seasonal closure.

Rationale: Road density in the Elk Emphasis Area averages 4.9 miles of road for every section of public land. Fully implementing road closures identified in Objective 1-1 would reduce road density to 4.1 miles per section, still above the prescribed standard. However, few opportunities remain to close roads without directly affecting access to private lands. By working with private landowners, other opportunities to further reduce road density in the Elk Emphasis Area may be realized.

3.2 ISSUE 2 OBJECTIVES

3.2.1 Objective 2-1

Maintain the mature and old growth forest ecosystems within the Cottage Grove Lake RFI ACEC over the life of this plan.

Rationale: The Eugene RMP designated the RFI as an ACEC because the stands are unique examples of low elevation mature and old growth forests remaining along the Willamette Valley fringe. They are some of the few remaining acres of old growth within the Cottage Grove Lake Key Raptor Area and they support 13 species of hawks and owls. Direction in the RMP is to maintain these values.

Management Action 2-1.1

Provide full fire suppression in the case of wildfire, for both natural and human-caused starts.

Management Action 2-1.2

Conduct inventories within the ACEC to determine existing numbers of snags and levels of downed wood; if so warranted by the inventories, create snags and provide downed wood at levels appropriate for LSR lands within the watershed.

Rationale: The RMP specifies that fire suppression plans will be developed where it is determined that natural fire would diminish the resource values of the ACEC.

In the case of the Cottage Grove Lake RFI ACEC, it consists of two small areas surrounded by private timber lands. Full suppression of ignitions within the ACEC is consistent with the District's overall policy toward fire suppression in areas with intermingled land ownership.

Snags and down wood are two primary habitat components for a wide variety of raptors, providing both nesting and foraging habitat. Other actions necessary to protect the ACEC's important values (such as withdrawing the area from mineral entry) are required by the RMP, so will not be included here.

3.3 ISSUE 3 OBJECTIVES

3.3.1 Objective 3-1

Improve or restore spatial connectivity of aquatic ecosystem by eliminating all high priority human-caused barriers within 6 years, and all moderate priority barriers within 10 years.

Rationale: One of the key objectives of the NWFP is to restore or maintain the ecological health of the aquatic ecosystem which includes the physical, biological, and/or ecological processes. Numerous streams are known to pass through culverts that are physical barriers to adult and juvenile fish, and other aquatic species. Poor design, improper location, and/or unstable downstream conditions are responsible for causing population fragmentation, and obstructing routes to areas critical for fulfilling life history requirements of aquatic species. In conjunction with the above, major storm events and above normal stream velocities over the past several years have created outfall barriers. This is a condition where the downstream channel has been severely eroded away, and the outlet of the culvert is so far above the tailwater that fish or other aquatic species cannot enter the pipe and migrate upstream to suitable habitat. Fish passage can also be impeded by inadequate water depth, excessive water velocity within the pipe, and inadequate resting pools in the approach to the culvert.

Management Action 3-1.1

Eliminate barriers to aquatic species migration at the road/stream crossings shown in Tables 3 and 4 below. Barriers may be eliminated by replacement of existing culverts, re-construction of existing sites, or installation of downstream

structures such as boulders or log weirs to raise upstream water levels within the culverts.

Where BLM and private ownership have a shared road maintenance responsibility, a negotiated cost-share agreement would need to be initiated. Where barriers exist on private lands, BLM would enter into negotiations with the private landowner to accomplish the work.

**Table 3--Management Action 3-1.1
High Priority Barriers**

Stream Network	Road Segment	Land Ownership	Road Control
Big River--headwaters	23-2-23	BLM	Shared
Big River--headwaters	23-3-5.4	Private	Shared
N. Fork Wilson Cr	21-3-3 (site 1)	Private	Private
Edwards Cr	23-3-1 (site 10)	BLM	Shared
Edwards Cr	23-3-1 (site 11)	BLM	Shared
Cedar Cr	22-4-1 (site 2)	BLM	BLM
Cedar Cr	Co. 2745 (site 1)	Private	County
Big River--headwaters	23-3-5.4 (site 15)	Private	Shared
Big River--headwaters	23-2-22/23.1 (site 14)	BLM	BLM
Johnson Cr	Spur off 22-3-18	BLM	BLM
Johnson Cr	22-3-18.1 (site 5)	Private	Private
Williams Cr	21-3-32 (site 3)	Private	Private

**Table 4--Management Action 3-1.1
Moderate Priority Barriers**

Stream Network	Road Segment	Land Ownership	Road Control
N. Fork Wilson Cr	21-3-33 (site 4)	BLM	BLM
N. Fork Wilson Cr	21-3-33 (site 5)	BLM	BLM
Edwards Cr	22-3-35 (site 5)	BLM	BLM
Edwards Cr	23-3-1 (site 7)	BLM	BLM
Edwards Cr	23-3-1 (site 8)	BLM	BLM
Edwards Cr	23-3-1 (site 12)	Private	Private
Big River Tributary	23-2-16 (site 13)	BLM	BLM
Johnson Cr	22-3-13 (site 2)	BLM	Shared
Williams Cr	21-3-32 (site 2)	Private	Private
Boulder Cr	23-3-12 (site 8)	BLM	Shared
Big River Tributary	23-3-5.4 (site 17)	Private	Shared

Barrier locations are rated as either high or moderate priority. A rating of *high* is based on the following criteria: 1) stream reach has been determined to be fish bearing above and below the barrier; 2) one or more of the above barrier conditions are extreme enough to restrict migration of most life history stages; 3) the barrier is located within the mainstem or major tributary, and is restricting access to a significant amount of suitable habitat, could be BLM and privately managed lands. A rating of *moderate* is given to sites that are: 1) not located on the mainstem, but tributaries that have a significant amount of suitable habitat, and can support or potentially support a sizeable fish or aquatic species population; 2) barriers may be seasonal, therefore the barrier may be a concern only under moderate and low flow conditions; 3) the culvert or barrier is located exclusively private ownership but would open additional habitat for resident salmonids.

Rationale: The road segments shown above have stream crossings that have been determined to be physical barriers for upstream migration for fish and other aquatic species. Because most resident salmonids and other fish migrate extensively throughout the basins to seek food, shelter, and spawning areas, certain human caused barriers can be detrimental to specific species or a particular life history stage. The barrier locations exhibit one or more of the following conditions: 1) excessive outfall conditions, jump is too high for either adults or juveniles to mitigate; 2) stream velocity is too high within the pipe, affecting most juvenile fish; 3) water depth within the culvert is too shallow; 4) no resting pool at the outlet of the pipe.

3.3.2 Objective 3-2

Improve the complexity of the aquatic environment within the watershed by restoring large woody debris and other in-stream structure to high and moderate priority stream channels within the next 10 years.

Rationale: The CGL/BR Watershed Analysis noted that large woody debris which once dominated the mainstem and tributaries is largely gone. Habitat has been reduced, where boulders, cobble and rubble now dominate the system, and stream complexity is extremely low.

Large woody debris, root wads and boulders are physical determinants of stream dynamics, and are important components of fish habitat.

Structure increases habitat complexity by creating pools, frequent step-like riffles, and laterally broadening the aquatic habitat. It alters the longitudinal characterization of the channel by creating a stepped channel profile, reduces the local gradient and velocity of the channel, thus providing a diversity of microhabitats critical for the life history stages of fish.

Structure maintains the stability of debris accumulation, traps gravels necessary

for spawning, and is an important base component in the biological food chain.

Management Action 3-2.1

Place large woody debris or other in-stream structures such as boulders in the streams shown in Table 5 below.

**Table 5--Management Action 3-2.1
High and Moderate Priority Stream Reaches for In-stream Enhancement**

Priority	Stream Network	Segment (T/R/S)	Distance	Land Ownership
High	Big River	T23S, R3W, Sec 11 & 12	2.0 miles	Private
High	Big River	T23S, R2W, Sec 16 & 22	1.5 miles	Private
High	Edwards Creek	T23S, R2W, Sec 8	0.8 miles	Private
High	N. Fork Wilson Cr	T22S, R3W, Sec 4	0.5 miles	Private
High	N. Fork Wilson Cr	T22S, R3W, Sec 3 & 11	1.1 miles	BLM
High	Edwards Creek	T23S, R2W, Sec 5 (site A)	0.2 miles	BLM
High	Edwards Creek	T23S, R2W, Sec 4 (site A)	0.2 miles	Private
High	Boulder Cr	T23S, R2W, Sec 18 (site 5)	0.5 miles	Private
Moderate	Martin Cr	T23S, R3W, Sec 3	0.1 miles	Private
Moderate	Jasper Cr	T23S, R3W, Sec 3	0.13 miles	BLM
Moderate	Jasper Cr	T23S, R3W, Sec 3	0.13 miles	Private
Moderate	Big River	T23S, R3W, Sec 22	0.15 miles	Private
Moderate	Williams Cr	T21S, R3W, Sec 25	0.2 miles	BLM

Rationale: The quality and quantity of physical habitat influence the abundance aquatic species' populations. The stream channel segments shown above have been evaluated for fish abundance and their relation to specific habitat characteristics, and have been identified as lacking the necessary habitat complexity for the various life history stages of salmonids. This deficiency is due to either human or natural caused habitat degradation, or the habitats are naturally low in productive capacity. The local and migrating biota would benefit significantly from the addition of large woody debris and/or the placement of other in-stream structures such as boulders. These stream segments were also selected because they could be implemented cost-effectively and with the least amount of environmental damage.

3.3.3 Objective 3-3

Within selected riparian reserves, accelerate the development of late-successional forest, provide a future source of large woody debris, and/or provide an immediate

pulse of coarse woody debris over the next two decades. Consider using commercial timber sales or noncommercial “cut-leave” applications where trees are felled and left on the ground to accomplish this objective.

Rationale: The CGL/BR Watershed Analysis shows that 77 percent of the watersheds riparian reserves are in the mid-seral stage. If left alone, these stands would eventually reach late-successional age and begin to function as late-successional forests. However, research has shown the development of late-successional characteristics can be accelerated by management actions such as density management. The watershed analysis also identified riparian reserves that are currently deficient in large woody debris. A “cut-leave” riparian thin would provide an immediate pulse of coarse woody debris to deficient areas, and open the stand for accelerated growth of residual trees.

Management Action 3-3.1

Conduct density management thinning or hardwood conversion, depending on site-specific conditions, along the stream reaches shown in Table 6.

**Table 6--Management Action 3-3.1
Riparian Conversion or Thinning Areas**

Stream Network	Segment (T/R/S)	Distance	Land Ownership
N. Fork Wilson Cr	T22S, R3W, Sec 3 & 11	1.1 miles	BLM
Jasper Cr	T23S, R3W, Sec 3	0.13 miles	BLM
Edwards Cr	T23S, R 2W, Sec 7	0.5 miles	BLM
Edwards Cr	T23S, R2W, Sec 5 (site A)	0.5 miles	BLM
Big River headwaters	T23S, R2W, Sec 23 (site 14)	0.3 miles	BLM
Boulder Cr	T23S, R2W, Sec 18 & 20	1.0 mile	BLM

Rationale: The selection criteria for the riparian segments are: 1) degree of hardwoods dominance or lack of overstory heterogeneity ; 2) relative benefit of thinning the riparian to develop late-successional stand characteristics, and develop a more desirable condition for stream temperature conditions; 3) current stand conditions ability to produce large woody debris to the stream channel in the future.

3.4 ISSUE 4 OBJECTIVES

3.4.1 Objective 4-1

Within the next decade, accelerate the development of late-successional forest structural characteristics within one-fourth of the stands in the LSR less than 80 years old by non-commercial treatments.

Rationale: As noted in the Cottage Grove Lake/Big River Watershed Analysis, about two-thirds of the LSR is currently younger than 80 years old. Past management of these stands emphasized timber production, so as a result, the development of late-successional structural complexity has been retarded. Noncommercial treatments such as those described below can redirect treated stands onto a trajectory to provide late-successional structural characteristics sooner than if left untreated. By targeting one-fourth of the younger stands for noncommercial treatments, future management opportunities remain for commercial treatments of additional stands. Additionally, the LSR area in CGL/BR functions more as a buffer than as core habitat because it is on the edge of a much larger LSR that has large blocks of late-successional forest. Therefore, if half of the 35-55 year old age class is untreated, the LSR area in Big River will still be able to perform its buffering function.

Management Action 4-1.1

Conduct individual tree release at an average of four trees per acre on approximately 500 acres of 25-35 year old stands within the LSR. Trees surrounding the individual dominant trees will be cut and left in place to provide a short term source of down wood.

Management Action 4-1.2

On approximately 1,000 acres, perform young stand (15-20 year age class) density reduction thinning.

Management Action 4-1.3

Create up to 10 snags per acre on approximately 500 acres of 60-70 year old stands.

Rationale: Management actions are needed to change the trajectory of stands in the LSR from high yield timber production to quality habitat stands if they are to meet late-successional goals of the future. The purpose of these actions is to redirect the successional development of the treated stands to meet the change in desired objectives on LSR acreage.

4.0 MONITORING

Monitoring measures how effective the management actions are in meeting resource objectives. For clarity, all monitoring actions have been assembled in this section and are listed below by appropriate objective.

4.1 Objectives 1: Transportation Management Monitoring

- C Compile annual reports detailing changes in road density in the watershed.

Particular attention should be given to road density changes in the Elk Emphasis Area.

- C Document road failures that occur throughout the life of the plan and determine likely causes of the failures. Consider updating a road segment's TMO based on documented road failures.

4.2 Objective 2: Cottage Grove Lake RFI ACEC

- C Monitor the level of non-native species within the ACEC to ensure long-term viability of native species annually.
- C Every five years, monitor ACEC for snags and down wood. If monitoring results show lower levels of snags or down wood than prescribed, additional snag creation and down wood placement should be considered.
- C Monitor wildlife observation reports for raptor sightings in the ACEC to determine species utilizing the ACEC.

4.3 Objective 3: Aquatic Habitat Restoration

- C Annually monitor road network to discover new barriers to aquatic organisms. If any are found, schedule repair work.
- C Establish photographic record of structures to document changes after exposure to peak flow conditions.
- C Every three years, conduct juvenile and adult fish sampling to document use of structures.
- C Annually monitor tree survival and growth in riparian restoration areas for at least the first five years after treatment.

4.4 Objective 4: LSR Restoration

- C Every five years, field check approximately 10% of the single-tree release areas to determine if the target tree has begun or is continuing to express dominance over neighboring trees. If dominance is not evident, consider felling additional trees adjacent to the target tree.
- C Twice during the life of this plan, monitor "wide spaced thinning" areas to determine the extent of competing vegetation, especially alder. If alder is beginning to dominate the stand, consider additional treatments.

- C On all acres receiving snag creation treatments, every five years, monitor acres to determine the number of existing snags. If snag levels drop below 10 per acre on treated acres, consider additional snag creation treatments.

5.0 PLAN EVALUATION

The South Valley Resource Area staff will conduct informal evaluations of monitoring data and resource conditions yearly, in preparation for the development of the Area's annual work plan. Formal evaluations will be completed every three years. Formal evaluations will be announced in the Eugene District's planning newsletter. At a minimum, formal evaluations will include the following:

- C Management actions that have been completed will be documented.
- C Monitoring data will be analyzed to determine if plan objectives are being met and to determine if implementation priorities are still valid.

If objectives are not being met, new management actions will be developed. New issues or proposals not contained in this plan will be analyzed to determine if they are consistent with the objectives. If they are, an environmental analysis will be conducted and the actions implemented.

Newly developed actions identified for implementation will become plan revisions or amendments.

APPENDIX A--TRANSPORTATION MANAGEMENT OBJECTIVES

The following table depicts the transportation objectives for all existing roads within the Cottage Grove Lake-Big River Watershed. Maintenance levels, types of closure, and corrective actions are shown. Maintenance levels are defined in the Western Oregon Transportation Management Plan (June 1996) as follows:

Maintenance Level 1 (ML1): Minimum maintenance is required to protect adjacent lands and resource values. Road is no longer needed and is closed to traffic. Road will be removed from transportation system.

Maintenance Level 2 (ML2): Road is open for limited administrative traffic, passable by high clearance vehicles.

Maintenance Level 3 (ML3): Road is open seasonally or year-round for commercial, recreation, or administrative access.

Maintenance Level 4 (ML4): Road is open year-round and connects major administrative features such as recreation sites, other roads, etc.

Maintenance Level 5 (ML5): Road is open year-round and receives the highest traffic volume of the system.

COTTAGE GROVE LAKE /BIG RIVER LANDSCAPE PLAN TRANSPORTATION MANAGEMENT OBJECTIVES							
ROAD NO.	SEGMENT	MILES	AQUATIC RISK RATING	TERRESTRIAL RISK RATING	HUMAN USES RATING	TRANS MGT OBJECTIVE	CORRECTIVE ACTIONS
20-4-1	B	0.19	L	L	M	ML2	
20-4-11	C	0.32	L	M	M	ML3	
20-4-11.1		0.43	L	L	L	ML1	Close--gate/block
20-4-35.1	A	0.32	L	M	M	ML2	
20-4-35.3		0.57	L	M	H	ML4	
21-3-16	C	0.47	L	L	M ¹	ML2	
21-3-16	Spur North	0.03	L	L	M	ML1	Close--gate/block
21-3-16	Spur South	0.33	L	L	M	ML1	Close--gate/block
21-3-17		0.23	L	L	L	ML2	
21-3-17.1		0.04	L	L	L	ML1	Close--gate/block
21-3-19		0.03	L	L	M ¹	ML3	
21-3-23		0.60	L	L	H	ML3	Add relief culverts
21-3-23.3		0.12	L	L	M	ML3	
21-3-23.4		0.50	L	L	M	ML3	
21-3-23.8		0.27	L	L	L	ML3	
21-3-27	B	0.18	M	H	M	ML2	Close--gate/block*
21-3-27.1		0.19	L	L	M	ML3	
21-3-27.2		0.18	L	H	M	ML2	Close--gate/block
21-3-27.3		0.51	M	H	M	ML2	Close--gate/block*
21-3-27.4		0.13	L	H	M	ML1	Close--decommission
21-3-27.5		0.12	L	H	L	ML2	Close--gate/block*
21-3-27.6		0.07	L	H	L	ML2	Close--gate/block*
21-3-27.7		0.10	L	H	M	ML1	Close--gate/block
21-3-28.1	D	0.40	L	H	M	ML2	Close--gate/block
21-3-29		0.77	L	L	H	ML5	
21-3-29.1		0.15	L	L	M	ML4	
21-3-34		0.12	L	H	M	ML2	Close--gate/block*
21-3-35		0.77	L	L	M	ML4	
21-3-35.2		0.24	M	H	L	ML2	Close--decommission
22-2-31		0.13	L	M	L**	ML3	
22-2-31.1		0.18	L	M	L**	ML3	
22-2-31.2		0.10	L	M	L**	ML1	Close--decommission
22-2-31.3		0.28	L	M	L**	ML1	Close--gate/block
22-2-31.4		0.19	L	M	L**	ML1	Close--decommission
22-2-32		0.67		H	M**	ML3	
22-2-33.1		0.30	L	L	L**	ML4	
22-2-33.2		0.53	L	H	M**	ML3	Close--gate/block
22-2-33.3		0.30	L	M	M**	ML3	Close--gate/block
22-3-2		0.47	L	L	H	ML3	
22-3-3.2	C	0.67	L	L	M	ML4	Replace culvert
22-3-3.3	B	0.16	L	L	M	ML3	
22-3-3.4		0.35	L	L	M	ML3	
22-3-3.5		0.25	L	L	L	ML3	
22-3-6	B	0.60	L	H	M	ML2	

COTTAGE GROVE LAKE /BIG RIVER LANDSCAPE PLAN TRANSPORTATION MANAGEMENT OBJECTIVES							
ROAD NO.	SEGMENT	MILES	AQUATIC RISK RATING	TERRESTRIAL RISK RATING	HUMAN USES RATING	TRANS MGT OBJECTIVE	CORRECTIVE ACTIONS
22-3-8	J	0.70	M	H	H	ML2	
22-3-9	C	0.11	M	L	H	ML3	Add cross drains
22-3-11	A1	0.45	H	L	H	ML1	Close--decommission
22-3-11	A2	1.00	H	L	H	ML1	Close--decommission
22-3-11.1		2.70	H	L	H	ML4	Replace culverts 8 & 9 for fish passage; add culverts; remove debris jam, repair road
22-3-11.4		0.25	L	L	H	ML2	
22-3-16.1	B	0.86	H	H	M	ML3	Replace fish barrier culverts; repair slide area
22-3-16.2	B	0.03	L	L	L	ML1	Close--block
22-3-18	C	1.04	M	H	H	ML5	repair culvert
22-3-18	Spur South	0.44	L	H	M	ML2	
22-3-18.2	B	0.50	H	L	L	ML1	Close--decommission
22-3-19	C	0.32	L	L	M	ML3	
22-3-19.2		0.35	L	L	M	ML2	
22-3-19.3	A1	0.80	L	L	H	ML3	
22-3-19.3	A2	0.27	L	L	M	ML2	
22-3-19.4	B	0.23	L	L	M	ML3	
22-3-19.5		0.18	L	L	L	ML3	
22-3-19.6		0.47	L	L	H	ML3	
22-3-19.7		0.15	L	L	M	ML3	
22-3-21		0.83	M	L	H	ML3	
22-3-21.1		0.63	L	L	H	ML3	
22-3-21.2		0.06	L	L	H	ML3	
22-3-21.3		0.07	L	L	H	ML2	
22-3-21.4		0.08	L	L	H	ML3	
22-3-23		0.23	L	M	H	ML2	
22-3-25	A1	0.50	L	L	M	ML3	Culvert maint needed
22-3-25	A2	0.45	L	H	M	ML1	Close--decommission
22-3-25.1		0.10	L	H	M	ML1	Close--decommission
22-3-25.2	A1	0.38	L	H	M	ML1	Close--decommission
22-3-25.3		0.40	M	L	M	ML3	Remove fill; add cross drains
22-3-26	C	0.29	L	L	M	ML2	
22-3-26	D	0.76	L	M	M	ML2	
22-3-27		0.55	L	L	L	ML1	Close--decommission
22-3-27.3		0.15	L	L	H ²	ML3	
22-3-27.4		0.40	L	M	L	ML1	Closed by 22-3-27
22-3-28.1		0.57	L	L	H	ML2	
22-3-31		0.35	L	H	H ³	ML3	
22-3-33.1		0.10	L	L	L	ML1	Close--gate/block
22-3-33.2		0.47	L	L	M	ML4	
22-3-35	D2	1.40	L/M	M	H* *	ML5	Repair stream crossing; install cross drains

COTTAGE GROVE LAKE /BIG RIVER LANDSCAPE PLAN TRANSPORTATION MANAGEMENT OBJECTIVES							
ROAD NO.	SEGMENT	MILES	AQUATIC RISK RATING	TERRESTRIAL RISK RATING	HUMAN USES RATING	TRANS MGT OBJECTIVE	CORRECTIVE ACTIONS
22-4-1.1			L	H	L	ML1	Close--decommission
22-4-1.3	B	0.71	L	H	H	ML5	
22-4-11		1.10	L	L	H	ML4	Fix blocked culverts
22-4-11.1		0.35	L	L	M	ML3	
22-4-11.5		0.10	L	L	L	ML2	
22-4-11.6		0.21	L	L	M	ML2	
22-4-11.7		0.03	L	H	M	ML3	
22-4-11.8		0.17	L	H	L	ML3	
22-4-13.1	A	0.05	L	L	M	ML3	
22-4-13.1	B	0.18	L	L	M	ML2	
22-4-13.2	A	0.08	L	L	M	ML3	
22-4-13.2	B	0.27	L	L	M	ML2	
22-4-13.3		0.10	L	L	M	ML3	
22-4-13.4		0.31	L	L	M	ML3	
22-4-13.5		0.11	L	L	M	ML3	
22-4-13.6		0.26	L	L	M	ML3	
22-4-13.7		0.16	L	H	L	ML3	
22-4-14		0.96	L	H	H	ML3	
22-4-23		0.30	L	H	M	ML2	
22-4-23.1		0.25	L	H	M	ML2	
22-4-25.1		1.35	H	H	L	ML1	Close--decommission
22-4-25.4		0.20	L	H	L	ML3	
22-4-25.7		0.37	L	L	L	ML1	Close--decommission
23-2-5	E	0.89	M/H	H	H**	ML3	Close--gate/block
23-2-5.1		0.72	L	H	M**	ML1	Close--decommission
23-2-5.2		0.15	L	M	L**	ML3	
23-2-5.3		0.53	L	M	L**	ML3	
23-2-6		0.80	L	M	H**	ML3	
23-2-7.1	B2	0.46	H/M	H	M** ⁴	ML1	Close--decommission
23-2-7.2	C2	0.58	L	H	L	ML2	Close--decommission
23-2-8	C	1.50	L	H	H** ⁵	ML2	Close--decommission
23-2-8.2	B	0.37	L	M	L**	ML3	
23-2-8.5		0.72	L	H	H**	ML2	Close--decommission at Sec 9
23-2-9		0.06	L	H	L**	ML2	Close--decommission
23-2-16	B	0.35	H	H	M**	ML1	Close--decommission
23-2-16.1	B	0.31	M	H	L**	ML1	Close--decommission
23-2-16.2		0.25	L	H	M**	ML3	Close--gate/block
23-2-16.4		0.44	M	M	L**	ML3	Repair culverts
23-2-17	B	0.57	L	H	H**	ML4	
23-2-17.1		0.05	L	M	L**	ML2	
23-2-18.1		0.06	L	H	L**	ML3	Close--gate/block
23-2-18.3		0.20	L	L	M**	ML3	
23-2-18.4		0.05	L	L	M**	ML3	
23-2-19	B	0.08	L	L	M**	ML3	

COTTAGE GROVE LAKE /BIG RIVER LANDSCAPE PLAN TRANSPORTATION MANAGEMENT OBJECTIVES							
ROAD NO.	SEGMENT	MILES	AQUATIC RISK RATING	TERRESTRIAL RISK RATING	HUMAN USES RATING	TRANS MGT OBJECTIVE	CORRECTIVE ACTIONS
23-2-19.1	C1	0.14	M	M	M (not LSR)	ML5	Replace culverts; repair cut/fill failures
23-2-19.2	B	0.40	L	L	M**	ML2	
23-2-21.2	B	0.15	L	H	M**	ML3	
23-2-21.3		0.10	L	H	M**	ML3	
23-2-23.1		0.25	L	H	L**	ML2	Close--gate/block
23-2-23.4		0.60	L	H	H**	ML3	
23-2-23.5		0.29	L	H	M**	ML1	Close--gate/block*
23-2-23.6		0.25	L	H	M**	ML1	Close--gate/block*
23-2-23.8		0.17	L	H	L**	ML3	Close--gate/block
23-2-26.1		0.32	L	H	L**	ML1	Close--decommission
23-2-27	B	0.11	L	L	M**	ML4	
23-2-27	Helipond Spur	0.06	L	L	M**	ML3	
23-2-27.1		0.22	L	M	M**	ML3	
23-2-27.3	B	0.06	L	M	M**	ML3	
23-2-27.4		0.11	L	M	M**	ML3	
23-2-27.5		0.38	L	M	M**	ML3	
23-2-27.6		0.24	L	M	M**	ML3	Close--gate/block
23-2-27.7		0.07	L	M	M**	ML3	Close--gate/block
23-2-27.8	B	0.16	L	M	L**	ML3	
23-2-27.9		1.06	M	M	H**	ML3	Close--gate/block
23-2-29	B	0.21	L	M	M	ML3	
23-2-29.1	C	0.61	H	M	H**	ML4	Maintain culverts
23-2-29.2		0.19	L	M	M	ML2	
*23-2-29.3		0.38	L	M	Mod	ML3	
23-2-33		1.38	M	M	H**	ML3	Close--gate/block
23-2-33.1		0.21	L	H	M**	ML3	Close--gate/block
23-2-35		0.70	L	M	L**	ML3	Close--gate/block
23-2-35.1		1.30	L		L**	ML3	
23-2-35.3		0.55	L	L	L**	ML3	
23-2-35.4		0.40	M	M	L**	ML3	Add cross drains
23-2-35.5		0.10	L	M	L**	ML3	Close--gate/block
23-3-1	C	1.06	H/M	H	H**	ML5	Replace undersized culverts; repair rd slump
23-3-1.1	C	0.08	L	L	M**	ML3	
23-3-1.2		0.20	L	L	M**	ML3	
23-3-1.4	B	0.43	L	L	M**	ML3	
23-3-1.5		0.10	L	L	M**	ML3	
23-3-3	CD	0.97	L/M	L	H	ML5	Evaluate for need for cross drains
23-3-3.1	DE	0.40	M	L	M	ML5/3	Replace undersized culverts
23-3-5	B	0.40	L	L	M	ML2	
23-3-5.3		0.17	L	L	M	ML2	
23-3-5.5	B	0.34	L	L	M	ML4	
23-3-8	A	0.19	L/M	H	L	ML1	Replace log culvert; add cross drain
23-3-8	B	1.52	L/M	H	H	ML4	Replace log culvert; add cross drain
23-3-8	C	0.05	L/M	H	M	ML1	Close--decommission

COTTAGE GROVE LAKE /BIG RIVER LANDSCAPE PLAN TRANSPORTATION MANAGEMENT OBJECTIVES							
ROAD NO.	SEGMENT	MILES	AQUATIC RISK RATING	TERRESTRIAL RISK RATING	HUMAN USES RATING	TRANS MGT OBJECTIVE	CORRECTIVE ACTIONS
23-3-8.1	B	0.47	M	L	M	ML1	
23-3-9		0.53	L/M	L	L	ML1	Close--gate/block
23-3-11		0.36	L	H	M	ML3	
23-3-12.1	B	0.25	L	H	M	ML3	Close--gate/block
23-3-13		0.50	M	H	H**	ML3	Repair/open culverts; add cross drains
23-3-13.1		0.41	L	M	M**	ML3	
23-3-13.2	A	0.28	L	M	L**	ML3	Close--gate/block
23-3-13.4		0.12	L	L	H** ⁶	ML3	
23-3-13.5		0.30	L	M	L**	ML3	Close--gate/block
23-3-13.6		0.10	L	M	L**	ML3	Close--gate/block
23-3-13.7		0.19	L	M	M**	ML2	Close--gate/block
23-3-13.8		0.08	L	M	L**	ML2	
23-3-15.1	CE	0.55	L	L	M	ML1	Close--decommission
23-3-15.2	B	0.31	L	L	M	ML3	
23-3-15.3		0.49	L	M	M	ML2	
23-3-15.4		0.25	L	L	M	ML3	
23-3-15.7		0.20	L	L	L	ML3	
23-3-17	D	0.72	M	L	H	ML2/3	
23-3-17	D Spur South	0.29	M	L	M	ML2/3	
23-3-17	D Spur West	0.08	M	L	L	ML2/3	
23-3-23.1		0.18	L	L	H	ML1	Close--decommission
23-3-23.2		0.40	L	L	H	ML2	
23-3-23.3	Spur North	0.10	L	H	H	ML1	Close--decommission
23-3-23.3	Spur West	0.25	L	H	H	ML1	Close--decommission
23-3-23.4		0.38	L	H	H	ML1	Close--decommission
23-4-1		1.42	M	H	H ⁷	ML4	
23-4-1	Quarry Spur	0.13	M	L	H ⁷	ML4	
23-4-1.1		1.58	L	L	H ⁸	ML4	
23-4-1.2		0.30	L	H	M	ML4	
23-4-1.3		0.27	L	L	M	ML3	
23-4-13		0.35	L	L	M	ML3	
23-4-13.1		0.06	L	L	L	ML3	

Footnotes:

- * = Defer closure until after PCT is done on unit accessed by road (approx 5 yrs)
- ** = Road is located in the Late Successional Reserve Land Use Allocation.
- ¹ = Road is currently barricaded.
- ² = Witt Butte Quarry Access Road.
- ³ = Hobart Butte Clay Mine Access Road; provides access to 7 mining load claims.
- ⁴ = Road is currently impassable at milepost 0.23 due to culvert blow out.
- ⁵ = Green Mtn. Quarry Access Road.
- ⁶ = Fawn Peak Quarry Access Road.
- ⁷ = Hobart Butte Pit Run Quarry Access Road.
- ⁸ = Hobart Butte Quarry Access Road.